EHS&L Document

Closure Plan for the Component Chemical Waste Tank

Nature of Changes

Item	Paragraph	Description	Justification
1.	Sections 2.2, 2.3, 3.1, and 3.2	Revised to remove discussions of, and references to, the etch process.	Etch process has been permanently discontinued.
2.			
3.			
4.			
5.			
6.			
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8.			
9.			
10.			
List Below any Documents, including Forms & Operator Aids which must be issued concurrently with this document revision:			

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DOCUMENT REVIEW/APPROVAL/DELETION CHECKLIST

All new and/or revised procedures shall be approved by the change author, cognizant manager(s) of areas affected by the changes, and by applicable manager(s) of any function that approved the previous revision of the document unless responsibility for such approval has been transferred to another organization. Also, the procedure shall be approved by manager(s) of functional organizations that provide technical reviews with the exception of the Training Department. Finally, Document Control shall verify that the required approvals have been properly obtained and that any documents that must be issued concurrently are ready to be issued.

Minor Changes: If the proposed changes are limited to editorial and/or administrative changes check the box at the right. The document will be routed directly for review by EHS&L without technical review. All applicable approvals must still be obtained.	☐

Document Reviews			**Document Approvals**	
Purpose/Function of Review	Specify Reviewer(s) (Optional except for change author)	(Check all that apply)	Title of Approver	(Check all that Apply)
Document Control (Automatic)		☒	Document Control (Automatic)	☒
Change Author	LJ Maas	☒	Author	☒
Independent Technical Review	JB Perryman	☒		
Operability Review(s)			Mgr, Richland Operations[1]	☐
Conversion		☐	Mgr, Uranium Conversion & Recovery Operations[1]	☐
Recovery		☐		
Ceramics		☐	Mgr, Ceramic Operations[1]	☐
Rods		☐	Mgr, Rods & Bundles[1]	☐
Bundles		☐		
Transportation		☐		
Components		☐	Mgr, Component Fabrication[1]	☐
Maintenance Review		☐	Mgr, Maintenance[1]	☐
Lab Review		☐	Mgr, Analytical Services[1]	☐
EHS&L Review(s)			Mgr, EHS&L[2]	☐
Criticality		☐	Mgr, Criticality Safety[2]	☐
Radiation Protection		☐	Mgr, Safety, Security & Emergency Preparedness[2]	☐
Safety/Security		☐		
Emergency Preparedness		☐		
MC&A		☐	Mgr, Licensing & Compliance[2]	☒
Transportation		☐		
Environmental		☒		
BWR Product Eng. Review		☐	Mgr, BWR Product Engineering	☐
BWR Core Engineering Review		☐	Mgr, BWR Core Engineering	☐
Codes and Methods Review		☐	Mgr, Codes and Methods	☐
Proj. Eng. & Design Support Review		☐	Mgr, Proj. Eng. & Design Support	☐
Quality Review		☐	Mgr, Quality	☐
Project & Plant Eng. Review		☐	Mgr, Project & Plant Eng.	☐
Purchasing Review		☐	Mgr, Purchasing	☐
Others:		☐	Mgr, Richland Site/Other	☐
Training & Employee Dev.: [3]		☐	Training & Employee Dev.	☐

[1]Note: If approvals include 2 or more product center managers, the Operations manager can be substituted for the applicable product center managers.

[2]Note: If approvals include 2 or more EHS&L functional managers, the EHS&L manager can be substituted for the applicable EHS&L functional managers.

[3]Note: Training department review is required for all procedures that require or affect a Learning Plan and if additional training materials or curriculum must be revised before issuing procedure.

EHS&L Change Impact Evaluation Form		
Document / ECN No*.: E06-04-009		Change Evaluator: LJ Maas
Does the change potentially impact Criticality Alarm System (CAS) coverage?	☐ Yes ☒ No	If yes, explain:
NRC Pre-Approval Evaluation:		
Is NRC Pre-approval (License Amendment) Needed? (Based on "Yes" answer to any of five questions below). (Based on "No" answer to all five questions below).	☐ Yes ☒ No	
1. Does the change create new types of accident sequences that, unless mitigated or prevented, would exceed the performance requirements of 10 CFR 70.61 (create high or intermediate consequence events) and that have not previously been described in AREVA NP Inc's ISA Summary?	☐ Yes ☒ No	If yes, explain:
2. Does the change use new processes, technologies, or control systems for which AREVA NP Inc. has no prior experience?	☐ Yes ☒ No	If yes, explain:
3. Does the change remove, without at least an equivalent replacement of the safety function, an item relied on for safety that is listed in the ISA Summary?	☐ Yes ☒ No	If yes, explain:
4. Does the change alter any item relied on for safety, listed in the ISA Summary, that is the sole item preventing or mitigating an accident sequence of high or intermediate consequences?	☐ Yes ☒ No	If yes, explain:
5. Does the change qualify as a change specifically prohibited by NRC regulation, order or license condition?	☐ Yes ☒ No	If yes, explain:
Actions Required Prior to or Concurrent with Change Implementation Evaluation:		
Action		**Explanation**
6. Modification / Addition to CAS system or system coverage documentation	☐ Yes ☒ No	If yes, explain:
7. Acquire NRC pre-approval (license amendment)	☐ Yes ☒ No	If yes, explain:
8. Conduct/modify ISA	☐ Yes ☒ No	If yes, explain:
9. ISA Database Modification	☐ Yes ☒ No	If yes, explain:
10. Modification of other safety program information / underlying analyses (PHA, RHA, FHA, NCSA, etc.)	☐ Yes ☒ No	If yes, explain:
Actions required subsequent to Change Implementation Evaluation:		
11. Update safety program information (PHA,RHA,FHA,NCSA, P&ID)	☐ Yes ☒ No	If yes, explain:

* **If this form exists as a part of a document, the document number is not required.**

Table of Contents

1.0 **Introduction**

This Closure Plan applies to the Component Chemical Waste Tank (CCWT) at the AREVA NP Inc. (AREVA) nuclear fuel fabrication facility in Richland, WA. The CCWT has been operated to-date as a less than 90-day accumulation tank in accordance with WAC 173-303-200. Based on the volume of the CCWT (2000 gallons) and the comparatively low waste generation rate of the process feeding the tank, the 90-day accumulation limit has typically necessitated emptying of the tank by a contracted waste treatment/disposal vendor when the tank is at 20% or less of capacity. Operating the tank as a permitted dangerous waste management unit will serve to limit the hazards and costs associated with unnecessarily frequent tank pump-outs.

1.1 *Regulatory Basis*

The CCWT constitutes a dangerous waste management unit requiring a written closure plan in accordance with WAC 173-303-610(3), including applicable requirements of WAC 173-303-640(8).

1.2 *Closure Performance Standard and General Closure Approach*

The closure performance standard for dangerous waste management units is listed in WAC 173-303-610(2). This standard requires AREVA to close the CCWT in a manner that:

- Minimizes the need for further maintenance;
- Controls, minimizes, or eliminates to the extent necessary to protect human health and the environment, post-closure escape of dangerous waste, dangerous constituents, leachate, contaminated runoff, or dangerous waste decomposition products to the ground, surface water, groundwater, or the atmosphere; and
- Returns the land to the appearance and use of surrounding land areas to the degree possible given the nature of the previous dangerous waste activity.

This Closure Plan has been developed to achieve this performance standard and to allow certification of the closure as complete and consistent with the requirements for clean closure.

AREVA's general approach for closure of the CCWT in a manner that complies with the performance standard for clean closure is as follows:

- Decontaminate all debris surfaces potentially contaminated with dangerous waste to meet the Alternative Treatment Standards for Hazardous Debris (40 CFR 268.45 Table 1).
- For debris surfaces where the "clean debris surface" as defined in the Alternative Treatment Standards" cannot be achieved or conclusively demonstrated, debris may be sampled and analyzed in accordance with an approved sampling and analysis plan to demonstrate that the debris does not exhibit a dangerous waste characteristic or criterion and therefore no longer requires management as a dangerous waste.
- Potentially contaminated debris not amenable to decontamination or post-decontamination inspection/analysis (e.g. small bore piping, valves) will be disposed offsite in accordance with regulations.
- Rinsates derived from the decontamination processes will be disposed of offsite in conjunction with the final tank waste inventory (see Sect. 2.4). Any residual rinsates generated after disposition of the final tank inventory will be collected in suitable containers and sampled for waste designation purposes and disposed of accordingly.

- Based on the tank-in-tank construction of the CCWT, no contamination of the supporting concrete slab with dangerous waste constituents is anticipated. Similarly, based on construction and placement of the CCWT, no contaminated environmental media (soil, groundwater) is reasonably anticipated.

The overall closure process for the CCWT is described below in Section 3.0, Closure Activities.

2.0 **Waste Management Unit Description**

2.1 *Facility Setting*

The CCWT is located outside of the northwest corner of the Component Center, which in turn is located on the western edge of the AREVA nuclear fuel fabrication facility. A map showing the location of the Component Center and supporting CCWT within the approximately 53-acre fenced AREVA site is provided as Figure 1.

The AREVA facility is located at 2101 Horn Rapids Road just within the northern limits of the City of Richland in Benton County, Washington. The fenced facility is a sub-portion of 320 acres of land owned by AREVA within the Horn Rapids Industrial Park. The plant, which manufactures fuel assemblies for commercial nuclear power reactors and intermediate fuel products for other fuel fabrication facilities, has been in operation since the early 1970s. Now owned by AREVA, the plant has also operated under a number of prior owners/names, most notably Exxon and Siemens. Throughout its operating history, and owing to its processing of special nuclear material [low (<5%) - enriched uranium], the AREVA facility has operated under a license from the U.S. Nuclear Regulatory Commission (NRC).

2.2 *CCWT Description*

The CCWT (Figure 2) is located outdoors just outside of the component pickling area (pickling room), which in turn is located in the northwest corner of the AREVA Component Center. The CCWT is actually a tank-within-a-tank system - a 2000 gallon inner tank and a 3500 gallon external containment tank. Both tanks are made of high density cross-linked polypropylene for full compatibility within the contained waste solutions. The tanks are situated on a 6-inch thick reinforced concrete monolithic slab with thickened perimeter edges. Pipes and fittings associated with the tank are stainless steel or polypropylene and located above-ground. A leak detection system with alarm capability is installed to detect any release of liquids from the inner tank into the containment tank. The CCWT has been provided with review and certification by an independent, qualified registered professional engineer as called for in WAC 173-303-640(2).

2.3 *Waste Inventory Description*

The CCWT manages liquid chemical wastes from the component pickling area within the AREVA Component Center. The chemical wastes are derived from the pickling process, a chemical process applied to stainless steel components to remove any free iron from the component surfaces and impart a corrosion-resistant oxide coating. The components processed consist of the metallic hardware parts (tie plates, rod end caps, spacer components, etc.), exclusive of cladding, used to fabricate nuclear fuel assemblies.

The pickling process utilizes a chemical dip tank. The pickling solution is a combination of deionized water, nitric acid (1-2 Molar), oxalic acid (~5%), and an organic surfactant/wetting agent (<1%). Cycle time for the components is typically about 40 minutes. Batches of spent pickling solution (~27 gallons ea.) are pumped to the CCWT approximately every 2-3 weeks. Between batches the tank is rinsed with water, with the rinsate also routed to the CCWT.

The waste managed in the CCWT is designated as D002, Corrosive.

2.4 *Maximum Inventory Disposition*

The corrosive liquid wastes managed in the CCWT are disposed of via a contracted offsite waste disposal contractor. No onsite pre-conditioning or treatment is required. The capacity of the inner tank which contains the waste is 2000 gallons; however the tank is managed to less than 85 percent of capacity (1700 gallons) via electronic level indication, with alarm capability. For the sake of closure planning, the full 2000 gallons will be utilized to account for the water rinsate that will be generated from the washdown of the tank interior and the annular cavity between the inner and outer tanks (see Section 3.0, Closure Activities, below). The disposal cost for the final tank inventory including washdown rinsate is included in Table 2 of Section 5.1, Closure Cost Estimate.

3.0 **Closure Activities**

This section addresses activities that will be completed during closure of the CCWT. The following activities are described:

- Removal of wastes and waste residues (Section 3.1)
- Decontamination of debris surfaces (Section 3.2)
- Removal of tanks and associated piping (Section 3.3)
- Cleaning of concrete support pad (Section 3.4)
- Confirming clean closure (Section 3.5)
- Sampling and analysis and constituents to be analyzed (Section 3.6)
- Role of the independent registered professional engineer (Section 3.7)
- Closure certification (Section 3.8)

3.1 *Removal of Wastes and Waste Residues*

AREVA will remove all dangerous waste and waste residues from the CCWT by pumping the wastes into the tanker truck of a contracted offsite dangerous waste disposal vendor. This is the routine procedure for emptying the CCWT. Pumping the tank contents via the installed pumpout piping typically leaves a liquid heel. This heel will be pumped out via a portable pump and flexible tubing. The pickle process wastes are accepted by the disposal vendor based on an approved waste profile on file with the vendor.

3.2 *Decontamination of Debris Surfaces*

Waste solutions managed within the CCWT and its associated piping are acidic (low pH) aqueous solutions; deposits on the interior of piping and the waste tank are not anticipated. After pumping of the final batches of pickling solutions to the CCWT, the small process dip tank will be flushed with copious amounts of water. This water will be pumped to the CCWT via the installed transfer piping. (This has been the standard procedure after all batch pumpouts; transfer lines have no history of containing waste solutions for an appreciable amount of time.) The amounts of water utilized for the final system flushing will significantly exceed volumes typically utilized for routine batch pumpouts. Flushing of the transfer lines to a residue-free surface is anticipated. The rinsate from the final transfer line flushing will be part of the final CCWT inventory removed as described in 3.1, above.

Prior to the final CCWT pumpout, the annular space between the inner and outer tanks will be high pressure-washed with water (pressure washer or fire hose). Access will be gained through the removable cover on the north edge of the outer tank top as well as an additional similarly-

sized access hole that will be cut through the outer tank top near its south edge. If deemed necessary, additional access holes can be easily cut. Water from the initial rinse will be pumped into the CCWT via a portable pump and flexible tubing. Once this pumping is complete, the pump will be removed and the high pressure washing of the annular space (floor, outside of inner tank, inside of outer tank) will be repeated. This second batch of wash water will also be pumped to the CCWT. Based on the limited opportunity for the annular space to have received waste solutions, the consecutive high-pressure washes are anticipated to result in residue-free surfaces. The rinsate from the annular space washings will be part of the final CCWT inventory removed as described in 3.1, above.

Lastly, the interior surfaces of the CCWT itself will be decontaminated. This will occur immediately after the final inventory pumpout described in 3.1, above. As in the case of the between-tank annular space, the interior of the CCWT will be decontaminated via an initial high-pressure water wash; pumpout of the initial wash rinsate, in this case to the waste vendor tanker; and a second high-pressure water wash, followed by pumpout to the vendor tanker. Both pressure washings will utilize copious amounts of water and are anticipated to produce residue-free interior tank surfaces. Passage of the rinse water through the pumpout piping is also anticipated to effectively decontaminate that piping.

3.3 *Removal of Tanks and Associated Piping*

Following completion of the decontamination activities described in 3.2 above, all liquid transfer piping associated with the CCWT will be dismantled and removed. The exterior tank will be dismantled in-place by cutting it into readily handled sections (~3 ft. by 3 ft.) using a reciprocating power saw. Once the exterior tank has been effectively cut away, the interior tank will be similarly cut-up in place using a reciprocating power saw.

3.4 *Cleaning of the Concrete Support Pad*

Based on the double containment afforded by the tank-in-tank configuration of the CCWT, no release of waste solutions to the concrete support pad is reasonably expected. Some staining of the pad related to seepage of rain water and associated dust/dirt underneath the outer tank may be encountered. Pressure washing of the pad may be conducted for cosmetic reasons; containment/collection of the rinsate should not be necessary.

3.5 *Confirming Clean Closure*

When the decontamination activities described in Section 3.2 are complete, AREVA anticipates that the high pressure water sprays and water washing (40 CFR 268.45 Table 1, 1e and 2a, respectively) will have decontaminated the pertinent debris surfaces (piping interiors, tank walls/floors) to a clean debris surface as defined in the Alternative Treatment Standards for Hazardous Debris. Visual inspection, documented via field notes and photos as appropriate, will be used to confirm achievement of the performance standard.

As indicated in Section 1.2, Closure Performance Standard and General Closure Approach, for surfaces where the clean debris surface criterion cannot be demonstrated (e.g., excessive surface staining), sampling and analysis may be employed to demonstrate that the debris does not exhibit a dangerous waste characteristic, in this case, corrosivity, and therefore no longer requires management as a dangerous waste. AREVA's Sampling and Analysis Plan (SAP) that would be applied is described in Section 3.6 of this Closure Plan, and is included as Appendix A.

Lastly, potentially contaminated debris not amendable to decontamination or post-decontamination inspection/analysis (e.g. small bore piping, valves) will be conservatively designated and disposed of off-site in accordance with regulations.

3.6 *Sampling and Analysis and Constituents to be Analyzed*

A detailed SAP supporting this Closure Plan has been included as Appendix A. As previously discussed and based on the tank-within-a-tank construction of the CCWT unit and its placement on a thick, easily inspected concrete pad, contamination of environmental media (soil, groundwater) is not reasonably anticipated. Accordingly, utilization of the Appendix A SAP may only be required if the clean debris surface criterion as defined in 40 CFR 268.45 Table 1 cannot be demonstrated (e.g. excessive surface staining) for certain debris surfaces, or portions thereof. The SAP will include the following:

- Statement of objectives
- Assignment of organizational responsibility
- Project schedule
- Identification of chemical constituents/characteristics to be analyzed
- Procedures for sample collection and labeling
- Analytical methods
- Procedures for sample handling and chain-of-custody
- Procedures for decontamination of sampling equipment
- Quality assurance measures
- Provisions for reporting of data

Constituents/characteristics to be analyzed are based on a review of the wastes managed in the CCWT and are identified in the SAP. This review will be repeated at the future date at which AREVA notifies Ecology of its notification to begin closure. If deemed necessary based on this review, AREVA will submit a revised SAP and will not begin sampling and analysis until the revised SAP is reviewed and approved by Ecology.

3.7 *Role of the Independent Registered Professional Engineer*

An independent qualified registered professional engineer will become familiar with the closure activities for the CCWT by reviewing this plan, observing field activities, and reviewing records. Key activities to be observed and/or reviewed shall include but not be limited to:

- removal of wastes and waste residues,
- decontamination of debris surfaces,
- inspections to determine achievement of the clean debris surface performance standard,
- management of removed wastes and decontamination residuals,
- implementation of the SAP, if required, and
- results of laboratory analysis.

When closure is complete, the engineer will sign and stamp AREVA's certification of clean closure.

3.8 *Closure Certification*

Within 60 days of completion of closure activities on the CCWT, AREVA will, in accordance with WAC 173-303-610(6), submit to Ecology, by registered mail, certification that the unit has been

closed in accordance with this closure plan. The certification will be signed by the appropriate company official and will also be signed and stamped by the independent qualified registered professional engineer who has monitored AREVA's implementation of the CCWT Closure Plan. AREVA will assemble, retain, and, as requested, submit to Ecology documentation supporting the certification. That information will include, but not be limited to:

- field notes and photographs documenting the closure activities,
- a description of any minor deviations from the plan and justification for these deviations,
- documentation of final disposition of dangerous wastes and treatment residuals,
- data resulting from implementation of the SAP, if required,
- a summary of activities and data observed/reviewed by the independent registered professional engineer, and
- a description of what the unit area looks like now that closure has been completed.

4.0 **Closure Schedule and Timeframe**

Notification of intent to close the CCWT will be sent to Ecology at least 45 days before initiating closure activities. Completion of closure activities will occur within 180 days. If the notification to Ecology includes a revised version of this closure plan or its accompanying SAP, the 180 day closure period will commence upon Ecology's approval of the revised plan and/or SAP. As provided in Section 3.8 above, closure certification will be submitted to Ecology within 60 days of completion of the closure activities.

5.0 **Cost of Closure**

5.1 *Closure Cost Estimate*

The information presented in this section for implementing the Closure Plan has been prepared in accordance with WAC 173-303-620(3). The following conservative assumptions were used in developing the cost estimate:

- A third party will be used to conduct closure activities.
- Inventory in the CCWT at the time of closure will be the total tank capacity, i.e. 2,000 gallons.
- Achievement of a clean debris surface will not be possible for some or all of the tank surfaces and thus the SAP (Appendix A) will need to be utilized to demonstrate that these tank surfaces do not exhibit the dangerous waste characteristic of corrosivity.
- Effective decontamination of interior pipe surfaces will not be able to be conclusively demonstrated, thus necessitating disposal of the piping as dangerous waste.
- Although eventual release of the tank structural materials from dangerous waste regulation is anticipated, the tanks will be dismantled in a manner that will not allow for their sale or re-use in another application. The tanks will be disposed of offsite as industrial waste.
- The closure activities will be overseen by an independent qualified registered professional engineer.

The costs for closure of the CCWT will consist primarily of the costs for disposal of the final tank inventory; labor costs for decontaminating debris surfaces (piping, tanks); labor costs for dismantling the tanks and associated piping; labor costs and analytical costs for enactment of

the sampling and analysis plan; disposal costs for the tank materials and piping; and costs for procuring the services of the independent registered professional engineer. These costs are presented below in Table 1, CCWT Closure Labor Costs, and Table 2, CCWT Closure Non-Labor Costs. The Table 1 labor costs are in turn based on the worker unit costs provided in Table 3, Worker Unit Cost Schedule.

The total costs taken from Tables 1-3 are summarized below and reflect the total amount for which AREVA must provide financial assurance relative to closure of the CCWT.

Total Labor Costs (Table 1)	$5,607
Total Non-Labor Costs (Table 2)	$9,175
Subtotal	$14,782
Contingency (10%)	$1,478
TOTAL	$16,260

The closure cost estimate will be adjusted annually for inflation in accordance with WAC-303-620(3)(c).

5.2 *Financial Assurance for Closure*

Financial assurance for closure will be provided by a letter of credit and associated standby trust agreement. Letter of Credit No. SB 22.300 is currently on-file with the Washington Department of Ecology's Hazardous Waste and Toxics Reduction Program office. The amount of the letter of credit will be maintained so as to cover the estimated closure costs plus contingency for the CCWT as well as AREVA's other permitted treatment, storage, or disposal facility - its Dangerous Waste Storage Facility (DWSF) dedicated to storage of containerized dangerous wastes.

5.3 *Financial Assurance for Liability*

AREVA will provide financial assurance for third-party liability coverage for sudden accidental occurrences as called for in WAC 173-303-620(8)(a) via a letter of credit. Letter of Credit No. SB 22.301 is currently on-file for this purpose with Ecology's Hazardous Waste and Toxics Reduction Program office.

Table 1 CCWT Closure Labor Costs

Work Activity	Labor Required, Days	Labor Cost, $*
Decontamination (high pressure washing) of tank/piping surfaces	General Laborer, 2	670
Dismantling of tank piping, valves, etc.	Pipefitter, 1 Electrician, 0.5	620 264
Dismantling of inner and outer tanks	General Laborer, 2	670
Inspection/sampling of debris surfaces	Environmental Engineer, 0.5	508
Packing/manifesting of offsite shipments (tank materials, piping, valves)	General Laborer, 1 Environmental Engineer, 0.5	335 508
Preparation of regulatory submittals	Environmental Engineer, 2	2,032
Total Labor Costs		5,607

* Costs based on Worker Unit Cost Schedule provided as Table 3.

Table 2 CCWT Closure Non-Labor Costs

Cost Component	Unit Cost, $	Total Cost, $
Vendor charges for pickup/disposal of final tank inventory (process waste and decontamination solutions)	1.98/gal + truck, driver, and mileage fees	6,487
Laboratory analyses of 8 tank/piping debris samples for solid corrosivity	20/sple.	160
Offsite disposal of 15 ft^3 of piping, valves, etc. (solid corrosive dangerous waste)	24.50/ft^3	368
Offsite disposal of 1.28 tons of tank materials (industrial waste)	47/ton	60
Services of independent registered professional engineer		1,900
Miscellaneous equipment/supplies	-	200
Total Non-Labor Costs		9,175

Table 3 Worker Unit Cost Schedule

Labor Cost Component	General Laborer	Pipefitter	Electrician	Environmental (Senior Project) Engineer
Salary & Fringe ($/hr)	29.26	54.24	46.19	-
Overhead Rate (%)	30	30	30	-
Profit on Labor (%)	10	10	10	-
Total Costs per Hour, $	41.84	77.56	66.05	127
Total Cost per Work Day, $	335	620	528	1,016

Notes:

- Salary and fringe rates for laborers and crafts derived from February 2008 Davis-Bacon Building Wage Rates for State of Washington, Benton County (Wage Determination WA11, Building).
- Overhead rate (average fixed + general) derived from R.S. Means, Building Construction Cost Data, 64th Edition, 2006.
- Environmental Engineer rate derived from currently contracted (2008) environmental engineering firm.

APPENDIX A - Sampling and Analysis Plan for Closure of the Component Chemical Waste Tank (CCWT) at the AREVA NP Inc. Richland Fuel Fabrication Facility

1.0 Sampling Objective

The objective of this sampling and analysis plan (SAP) is to evaluate decontaminated debris from closure of the CCWT to demonstrate that the debris does not exhibit the dangerous waste characteristic of corrosivity, thereby no longer requiring management as a dangerous waste. As noted in the closure plan for the CCWT, debris surfaces will have been previously decontaminated via high pressure water sprays/flushing in order to achieve a clean debris surface as defined in 40 CFR 268.45 Table 1. Demonstration of a clean debris surface will allow release of the debris from dangerous waste management. Implementation of this SAP will be necessary only to the extent that there is debris for which a clean debris surface was not achieved (e.g., excessive staining) or cannot be verified via inspection (e.g., certain piping). Based on the anticipated achievement of clean debris surfaces, required implementation of this SAP is not anticipated.

2.0 Organizational Responsibility

The project manager for implementation of this SAP will be a qualified professional from the Environmental, Health, Safety, and Licensing (EHS&L) organization within AREVA. The project manager's responsibilities will include: ensuring the project is performed according to this SAP; selection/collection of samples; maintenance of field notes; acting as the laboratory interface; and producing a final report.

3.0 Project Schedule

The SAP will be implemented, if necessary, in conjunction with the closure of the CCWT. An overall schedule and timeline for closure of the CCWT is provided in Section 4.0 of the CCWT Closure Plan.

4.0 Constituents/Characteristics to be Analyzed

As discussed in Section 2.3 of the Closure Plan, the wastes managed in the CCWT designate solely due to their corrosivity (D002). Accordingly, this SAP is limited to the collection of solid debris samples for the evaluation of state-only solids corrosivity. This testing will be conducted in accordance with SW846, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Method 9045.

5.0 Sample Collection and Labeling

Sample collection will involve the cutting of small pieces of material from the potentially contaminated surfaces of larger pieces of debris, e.g. approximately 3 ft. by 3 ft. sections of tank wall or no greater than 6 foot sections of piping. As previously discussed, implementation of this SAP will only occur if certain of the debris does not meet, or cannot be effectively inspected to demonstrate that it meets, the clean debris surface criterion of 40 CFR 268.45 Table 1. Sections of tank walls or piping meeting the clean debris surface criterion will not require sampling. Samples will be collected as follows:

Sample Type	No. Samples	Instructions
Tank material	5	From five individual sections of tank material exhibiting staining
Piping	3	From three individual sections of piping exhibiting staining or not able to be visually inspected

Samples of the tank material will be collected via a small hand saw or alternatively, using a sharpened wood chisel and mallet. Piping samples will be collected via a hand saw. Efforts will be made to preserve a surface area to mass ratio for the sample that is representative of the material being sampled. Sections of tank material or piping sampled will be labeled sequentially via an indelible marker; this number will also be recorded on the plastic sample bottle into which the sample is placed. An example of a sample label is provided as Figure 3.

In addition to the information recorded on the sample label, any other pertinent information needed to describe or characterize the sampled material or the sample itself will be recorded in the field notes.

6.0 Analytical Method

As noted in Section 4.0, above, the debris samples will be analyzed for solids corrosivity in accordance with Method 9045 of SW846. This method involves soaking the sample in a volume of water in milliliters equal to the weight of the sample in grams for one hour. The water is then measured for pH via a calibrated pH meter. The debris sample is determined to be non-corrosive if the pH of the water is greater than 2 but less than 12.5.

7.0 Decontamination of Sampling Equipment

All sampling equipment contacting the sampled debris surfaces will be decontaminated prior to use and between samples by washing with a laboratory-grade, non-phosphate detergent and rinsing with deionized water. All field personnel will wear clean nitrile or vinyl gloves when conducting sampling and decontamination procedures.

8.0 Sample Handling and Chain of Custody

Samples collected and labeled as outlined in Section 5.0 will be placed in a cooler with ice immediately after collection. The cooler of filled sample containers, along with sufficient ice to effectively cool the samples during transport, will be shipped via overnight courier to the contracted laboratory. The selected laboratory will be accredited under WAC 173-50.

All samples will remain in the custody of the sampling personnel during each sampling day. At the end of each sampling day and prior to the transfer of the samples for offsite shipment, chain-of-custody entries will be made for all samples using a Chain-of-Custody form (Figure 4). One Chain-of-Custody form will be completed for each cooler of samples. All information on the Chain-of-Custody form and the sample container labels will be checked against the sampling log entries, and the samples will be recounted before transferring custody. Upon transfer of custody, the Chain-of-Custody form will be signed by the project manager, sealed in plastic, and placed inside the sample cooler.

A signed, dated custody seal (Figure 5) will be placed over the lid opening of the sample cooler to indicate if the cooler is opened during shipment. All Chain-of-Custody forms received by the laboratory must be signed and dated by the laboratory's sample custodian.

The custodian at the laboratory will note the condition of each sample received as well as questions or observations concerning sample integrity. The sample custodian will also maintain

a sample tracking record that will follow each sample through all stages of laboratory processing. These records will be used to determine compliance with holding time limits during laboratory audits and data validation.

9.0 Quality Assurance Measures

The collection of solid debris samples and their follow-on analysis for corrosivity are not amenable to many of the traditional sampling and analysis quality assurance measures, i.e. blind duplicates; trip blanks; equipment rinsates; and laboratory spikes, and percent recoveries. The laboratory utilized will be accredited under WAC 173-50. For the sake of data quality assurance, AREVA will request copies of the laboratory's calibration data associated with the pH measurements.

10.0 Data Reporting

The results of the SAP will be reported to Ecology as part of the closure certification package.

Figure 1 Site Map

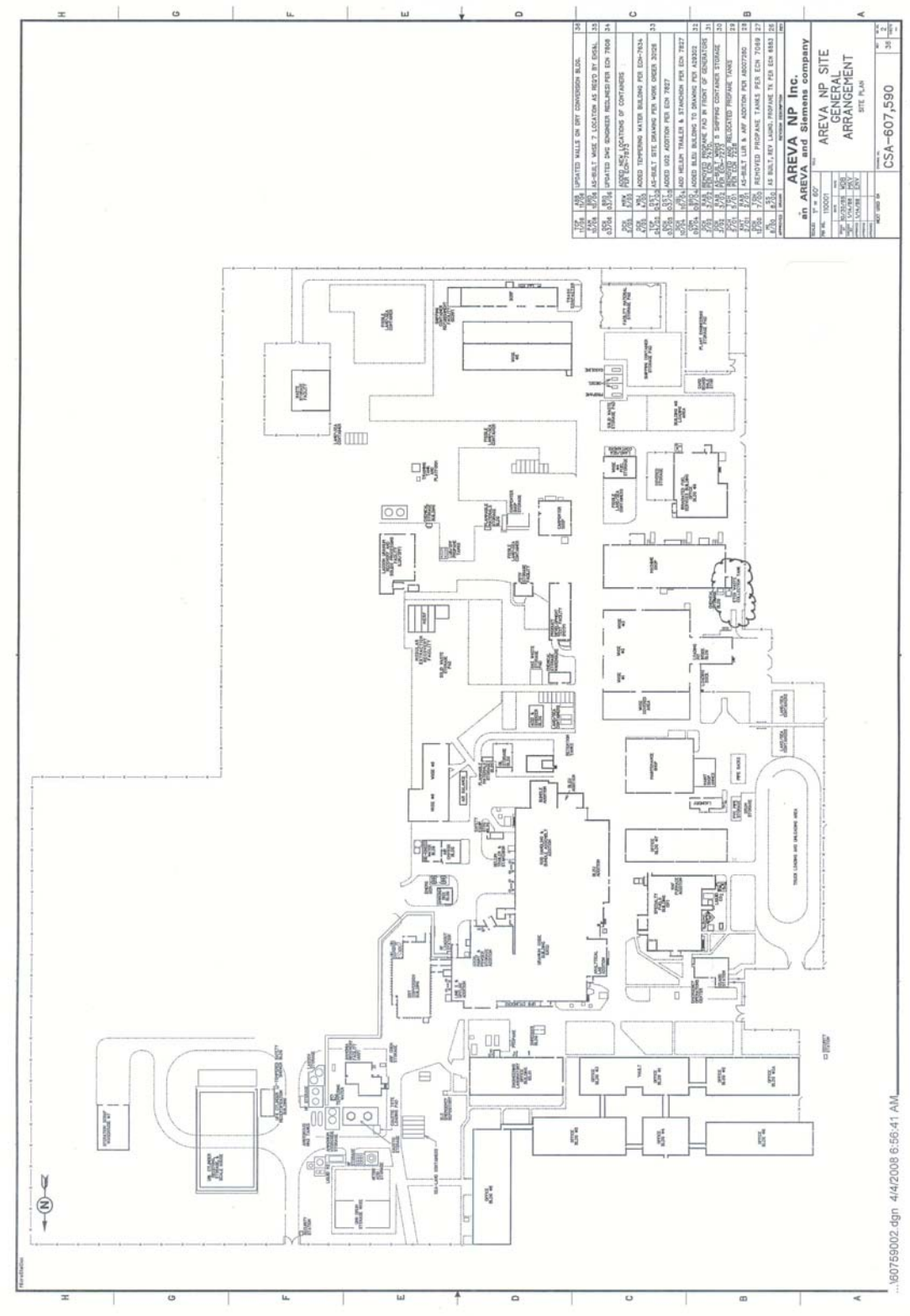


Figure 2 Photo of CCWT

Figure 3 Sample Label

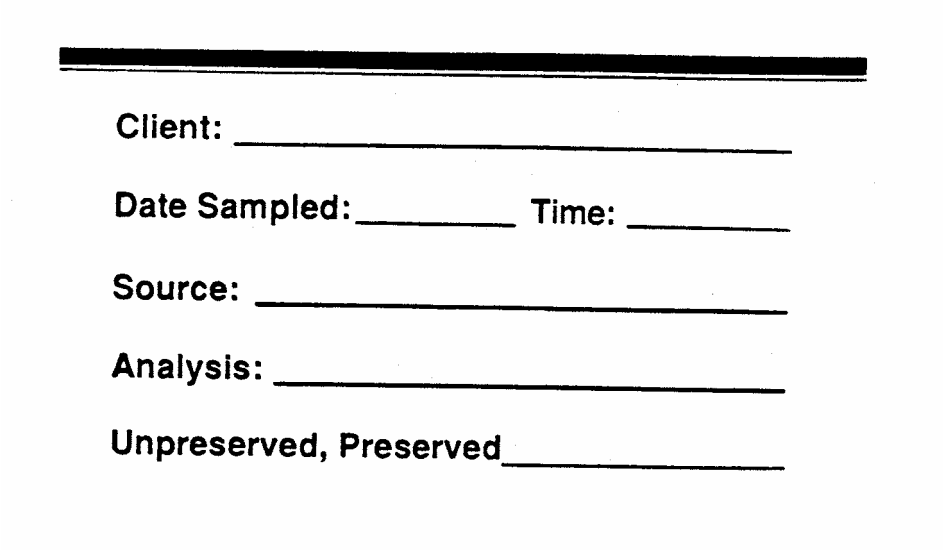


Figure 4 Chain of Custody Form

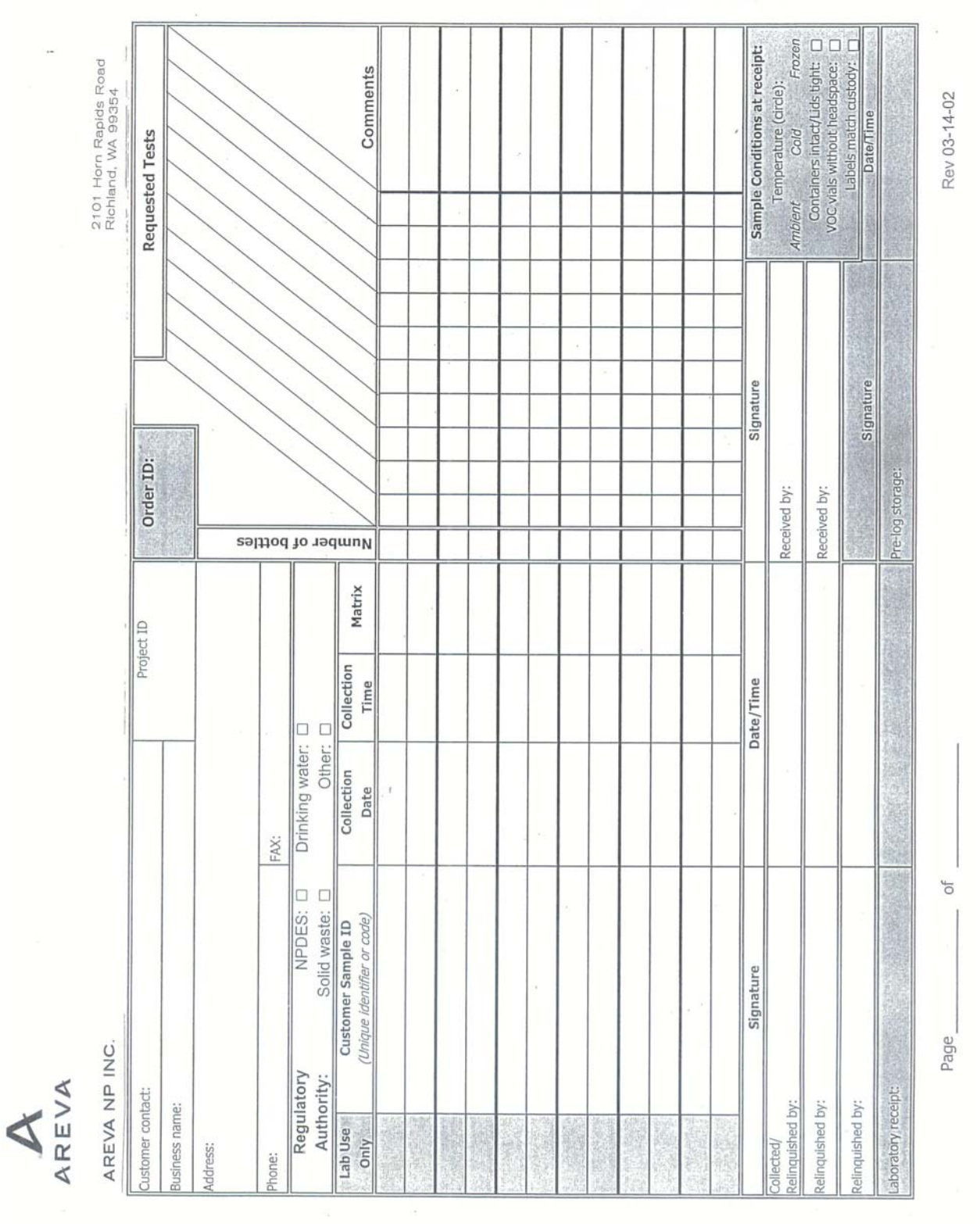
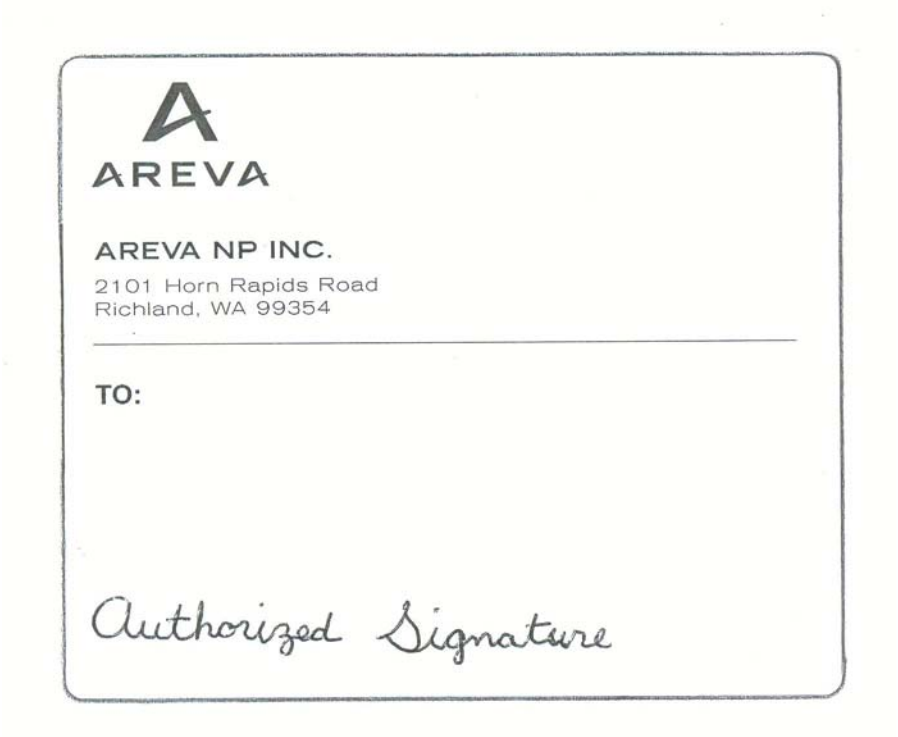


Figure 5 Chain of Custody Seal



AREVA NP Inc.

E06 Environmental Protection
E06-04 Miscellaneous Reports

E06-04-009
Version 2.0

Closure Plan for the Component Chemical Waste Tank

Date (GMT)	Signed by
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Authorization/Title	Document Control Approval